

CLAIMS

1. A method for powder coating a non-conductive plastic substrate comprising the following steps:
 - (a) cleaning said substrates to remove any contaminants or mold release agents therefrom;
 - (b) applying an adhesive/sealer to said substrate;
 - (c) curing said adhesive/sealer by means of heat;
 - (d) applying a thermosetting powder to the hot substrate; and
 - (e) curing said thermosetting powder with heat.
2. A process as claimed in claim 1 further including applying an additional layer of thermosetting powder to the substrate while said substrate is still hot.
3. A process as claimed in claim 2 further including the additional step of curing said additional layer of thermosetting powder with heat.
4. A process as claimed in claim 1 wherein said non-conductive plastic substrate is nylon.
5. A process as claimed in claim 1 wherein said substrate is moved through the sequence series of steps by the use of a continuous overhead conveyor.
6. A process as claimed in claim 1 wherein said substrate is cleaned in a cleaning booth which spray rinses said substrates and then blow dries said substrates with warm air.

7. A process as claimed in claim 1 wherein said adhesive/sealer is spray coated to said substrate.
8. A process as claimed in claim 1 wherein said adhesive/sealer is cured in a convection oven at a temperature and for a time sufficient for the adhesive/ primer to cure.
9. A process as claimed in claim 1 wherein said substrate is moved from step (c) to step (d) through a controlled tunnel in which the surface and core temperature of said substrate is measured via a temperature probe which controls an infrared heating system which maintains the surface and core temperature of the substrates at a specified temperature.
10. A process as claimed in claim 1 wherein said thermosetting powder is applied to said substrate through a non-electrostatic powder spray at a sufficient volume and for a sufficient time to coat said substrate in accordance with the specified film desired.
11. A process as claimed in claim 1 wherein said thermosetting powder is cured in a curing oven employing an infrared heating system and a convection oven heating system.
12. A process as claimed in claim 11 wherein said infrared heating system brings the surface temperature of the substrate to be cured to the curing temperature immediately.

13. A process as claimed in claim 2 wherein said substrate is moved from the step curing the thermosetting powder to the step of applying an additional layer of thermosetting powder through a temperature and humidity controlled tunnel with IR heating controlled by temperature probes measuring substrate surface temperatures.
14. A process as claimed in claim 1 wherein said additional layer of thermosetting powder is applied to the substrate for a sufficient time and volume to allow for the sufficient coating of the substrate as desired.
15. A process as claimed in claim 14 wherein said subsequent powder coating is cured in a second curing oven using an IR heating system and a convection over heating system wherein said IR system brings the surface temperature of the part to the curing temperature immediately.
16. A process as claimed in claim 15 wherein said substrate is un-racked subsequent to the second curing oven.
17. A process as claimed in claim 7 wherein said adhesive/sealer is water based.
18. A process as claimed in claim 8 wherein said curing takes place at a temperature of 325° Fahrenheit for a period of more than 10 minutes.

19. A process as claimed in claim 9 wherein said surface temperature of the substrate is maintained between 265° Fahrenheit and 290° Fahrenheit.
20. A process as claimed in claim 11 wherein said curing takes place at a temperature between 265° Fahrenheit and 290° Fahrenheit.
21. A process as claimed in claim 12 wherein said curing temperature is between 325° Fahrenheit and 375° Fahrenheit.
22. A process as claimed in claim 12 wherein said curing time takes between 3 and 7 minutes.
23. A process as claimed in claim 14 wherein said additional layer is a powder coat which is a clear coat or a top sealer.
24. A process as claimed in claim 1 wherein said curing takes place at a temperature lower than the VICAT melting point of said adhesive/sealer and powder.
25. A process as claimed in claim 24 wherein said curing temperature is between 150° Fahrenheit and 375° Fahrenheit.
26. A process as claimed in claim 25 wherein said curing takes place at 200° Fahrenheit.